In the Claims:

Please cancel claims 1-4, and 13-20. Please add new claims 23-27. Following is a complete listing of the claims pending in the application, as amended:

1-4. (Cancelled)

5. (Currently amended) A method in a data processing system for identifying subnet address ranges for ~~a~~ subnets being used in a network, comprising:

determining a plurality of addresses of hosts in the network;

accessing a binary tree, the binary tree having a root node having no parents, parent nodes including the root node each having ~~two~~ a pair of child nodes, and leaf nodes having no child~~ren~~ nodes, such that the root node represents the entire range of addresses available in the network, such that each child node in a pair of child nodes represents a distinct half of the range represented by the parent node of the pair of child nodes, and such that each leaf node represents a single network address that is within the address ranges represented by all of the ancestors of the leaf node, each determined host address being represented by a leaf node;

traversing the binary tree in preorder to identify candidate nodes~~,~~ such that both child nodes of each candidate node ~~having~~ have one or more descendant leaf nodes representing a determined host address;

testing the address range represented by each visited candidate node to determine whether the address range is a subnet address range for a subnet being used in ~~a~~ the network;

if testing indicates that a visited candidate node represents an address range that is a subnet address range for a subnet being used in a network, identifying the visited candidate node as a subnet node; and

skipping, in the traversal, any candidate nodes that are descendants of an identified subnet node.

6. (Original) The method of claim 5 wherein testing comprises, for the two subranges represented by the child nodes of the candidate node:

sending one or more packets each from a source address to a destination address, each packet requesting a reply, the source and destination addresses being in different subranges for each packet;

for each packet, determining whether a reply to the packet is sent directly from the destination address back to the source address; and

if, for a number of packets exceeding a threshold number, a reply to the packet is sent directly from the destination address back to the source address, determining that the candidate node represents an address range that is a subnet address range for a subnet being used in a network.

7. (Original) The method of claim 5 wherein testing comprises, for the two subranges represented by the child nodes of the candidate node:

selecting the address within each subrange that is closest to the addresses of the other subrange;

determining whether the network contains a host responding to either of the selected addresses; and

if the network contains a host responding to either of the selected addresses, determining that the candidate node represents an address range that is a subnet address range for a subnet being used in a network.

8. (Original) The method of claim 5, further comprising, before traversing the binary tree, trimming the binary tree by deleting nodes not on the path between the root node and any leaf node representing a determined host address.

9. (Original) The method of claim 5, further comprising, before traversing the binary tree, trimming the binary tree by deleting all nodes not on a path between the root node and any leaf node representing a determined host address.

10. (Currently amended) A computer-readable medium whose contents cause a data processing system to identify subnet address ranges for ~~a~~ subnets being used in a network by:

receiving a plurality of addresses of hosts in the network;

accessing a binary tree, the binary tree having a root node having no parents, parent nodes including the root node each having ~~two~~ a pair of child nodes, and leaf nodes having no child~~ren~~ nodes, such that the root node represents the entire range of addresses available in the network, such that each child node in a pair of child nodes represents a distinct half of the range represented by the parent node of the pair of child nodes, and such that each leaf node represents a single network address that is within the address ranges represented by all of the ancestors of the leaf node, each received host address being represented by a leaf node;

traversing the binary tree in preorder to identify candidate nodes~~,~~ such that both child nodes of each candidate node ~~having~~ have one or more descendant leaf nodes representing a received host address;

testing the address range represented by each candidate node in the traversal visited to determine whether the address range is a subnet address range for a subnet being used in ~~a~~ the network;

if testing indicates that a visited candidate node represents an address range that is a subnet address range for a subnet being used in a network, identifying the visited candidate node as a subnet node; and

skipping, in the traversal, any candidate nodes that are descendants of an identified subnet node.

11. (Original) The computer-readable medium of claim 10 wherein testing comprises, for the two subranges represented by the child nodes of the candidate node:

sending one or more packets each from a source address to a destination address, each packet requesting a reply, the source and destination addresses being in different subranges for each packet;

for each packet, determining whether a reply to the packet is sent directly from the destination address back to the source address; and

if, for a number of packets exceeding a threshold number, a reply to the packet is sent directly from the destination address back to the source address, determining that the candidate node represents an address range that is a subnet address range for a subnet being used in a network.

12. (Original) The computer-readable medium of claim 10 wherein testing comprises, for the two subranges represented by the child nodes of the candidate node:

selecting the address within each subrange that is closest to the addresses of the other subrange;

determining whether the network contains a host responding to either of the selected addresses; and

if the network contains a host responding to either of the selected addresses, determining that the candidate node represents an address range that is a subnet address range for a subnet being used in a network.

13-20. (Cancelled)

21. (Currently amended) A computer memory containing a subnet identification tree data structure for use in identifying a subnet in a network, a range of addresses being available in the network, some of the addresses available in the network being host addresses, the a subnet identification tree data structure comprising:

a root node having ~~two~~ a pair of child nodes, the root node representing the entire range of addresses available in the network;

a plurality of intermediate nodes each having one parent node and ~~two~~ a pair of child nodes, the root node and the intermediate nodes each having ~~two~~ a pair of child nodes, each child node in a pair of child nodes representing a distinct half of the range represented by the parent node of the pair of child nodes; and

a plurality of leaf nodes having no child~~ren~~ nodes, each leaf node representing a single network address that is within the address ranges represented by all of the ancestors of the leaf node, each host address being represented by a leaf node,

so that the subnet identification tree data structure may be traversed to identify an intermediate node representing an address range corresponding to a subnet in the network.

22. (Currently amended) The computer memory of claim 21 wherein the ~~[a]~~ subnet identification tree data structure contains only nodes that are on a path from the root node to one of the leaf nodes representing a host address.

23. (New) The computer-readable medium of claim 10 wherein the contents of the computer-readable medium further cause the data processing system to trim the binary tree by deleting nodes not on the path between the root node and any leaf nodes representing a received host address before traversing the binary tree.

24. (New) The computer-readable medium of claim 10 wherein the contents of the computer-readable medium further caused the data processing system to trim the binary tree by deleting all nodes not on the path between the root node and any leaf nodes representing a received host address before traversing the binary tree.

25. (New) A data processing system for identifying subnet address ranges for subnets being used in a network, comprising:

a receiver that receives a plurality of addresses of hosts in the network;

a tree memory storing a binary tree, the binary tree having a root node having no parents, parent nodes including the root node each having a pair of child nodes, and leaf nodes having no child nodes, such that the root node represents the entire range of addresses available in the network, such that each child node in a pair of child nodes represents a distinct half of the range represented by the parent node of the

pair of child nodes, and such that each leaf node represents a single network address that is within the address ranges represented by all of the ancestors of the leaf node, each determined host address being represented by a leaf node; and

a tree traversal subsystem that traverses the binary tree stored in the tree memory in preorder, skipping any candidate nodes that are descendents of an identified subnet node, to identify candidate nodes such that both child nodes of each candidate node have one or more descendent leaf nodes representing a determined host address, that tests the address range represented by each visited candidate node to determine whether the address range is a subnet address range for a subnet being used in the network, and that identifies a visited candidate node as a subnet node if testing indicates that the visited candidate node represents an address range that is a subnet address range for a subnet being used in the network.

26. (New) The data processing system of claim 25, further comprising a tree trimming subsystem that, before the tree traversal subsystem traverses the binary tree, trims the binary tree by deleting nodes not on the path between the root node and any leaf node representing a determined host address.

27. (New) The data processing system of claim 25, further comprising a tree trimming subsystem that, before the tree traversal subsystem traverses the binary tree, trims the binary tree by deleting all nodes not on the path between the root node and any leaf node representing a determined host address.

REMARKS

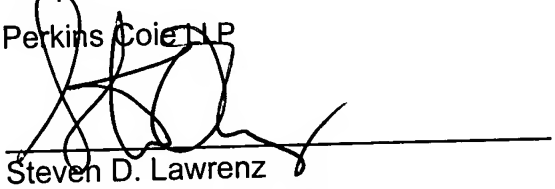
The application as filed contained claims 1-22. By this amendment, applicant hereby amends claims 5, 10, 21, and 22; cancels claims 1-4 and 13-20; and presents new claims 23-27 in order to more clearly identify the subject matter that applicant regards as his invention. As a result, claims 5-12 and 21-27 are now pending.

In the Office Action mailed on August 27, 2002 in the parent of the present application, U.S. Patent Application No. 09/457,442, the Examiner rejected claims similar to some of the claims presently pending based upon a combination of U.S. Patent No. 6,385,649 to Draves et al. ("Draves") and Lin et al. ("Lin"), "An Algorithm for Automatic Topology Discovery of IP Networks" 1998 IEEE International Conference on Communications, Conference Record, New Century Communications. Applicant notes that neither Draves nor Lin discloses or suggests using a tree structure to guide testing for subnetworks within a network. Further, neither Draves nor Lin discloses or suggests identifying candidate nodes in such a tree where both children of each candidate node have a descendent node that corresponds to a network address that has been determined to be used by a host operating in the network. Further, the passage at 4:32-42 of Draves indicated by the Examiner to disclose skipping, in a traversal, any candidate nodes that are descendents of an identified subnet node actually discloses skipping nodes (on a different basis) in a traversal of a tree that is subsequent to the traversal in which that basis is determined. Accordingly, this passage of Draves does not disclose, or even suggest, skipping nodes in the same traversal in which subnet nodes are identified as recited.

For at least the reasons enumerated above, applicant submits that the pending claims are patentable over the combination of Draves and Lin. Accordingly, if the Examiner is unable to identify prior art that is more relevant to applicant's claims, applicant submits that the Examiner should promptly issue a notice of allowance.

If the Examiner has any questions or matters that can be expediently handled by telephone, he or she is encouraged to contact the undersigned at (206) 359-6373.

Respectfully submitted,
Perkins Coie LLP



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